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
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THE HIDDEN LIBRARY CURRICULUM: CHILDREN'S ELECTRONIC
PATHFINDER ANALYSIS AND INFORMATION LITERACY SKILLS

By
Collette Baldasare

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
Of
The Graduate School
At
Rowan University

Approved by _____
Professor 

Date Approved May 14, 2004

ABSTRACT

Collette Baldasare

THE HIDDEN LIBRARY CURRICULUM: CHILDREN'S ELECTRONIC PATHFINDER ANALYSIS AND INFORMATION LITERACY SKILLS

2003/04

Dr. Marilyn Shontz

Master of Arts in Public Librarianship

The purpose of this survey investigation was to ascertain the degree of conformity of selected public library electronic pathfinder collections for children in the United States and Canada to assess format, components, and readability and whether the collections were effectively constructed to be used as starting points for further research. This research paper explains the relationship of instructional design models, information literacy skills, and the analysis of selected resources. An email questionnaire was mailed to ten libraries within the United States and Canada. The email questionnaire is a modified version of a survey sent to academic libraries by Grimes and Morris in 2001. The modifications were made to identify how public libraries and children's services develop and maintain electronic pathfinders for children. Analysis of content of twenty-four electronic pathfinders was accomplished by a researcher-designed rubric.

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CHAPTER ONE

STATEMENT OF THE PROBLEM

Electronic pathfinders are important reference guides that save the librarian time and energy. They allow library users to independently use library resources as a means of discovering information as a starting point for research. Electronic pathfinders are also important because they are considered a valuable tool to teach library users how to use the library and enhance their research skills. This is achieved when library users use these computer-based subject guides that introduce a variety of formats including web links and online journals as recommended sources of information. The pathfinder format when developed correctly and maintained frequently allows patrons (i.e., library users) to independently locate books by call number ranges and materials using suggested keywords.

Significance of the Problem

The electronic pathfinder adds another dimension to using the Internet as a research tool, while assisting students in developing a search strategy and directing them to use a variety of resources. Since students are becoming more dependent on the Internet as their sole source of information, the electronic pathfinder is designed to: eliminate the frustration in locating information on the Internet, provide students with alternate resources to use in locating answers to questions, instruct students on how to

identify appropriate subject headings and keywords to use in searching for information relevant to the topic, and finally provide a path for students to follow, enabling them to focus their research and target the most appropriate resources (Sullivan and Scott, 2000, p. 40). This paper identifies strategies underlying the library curriculum that are of high value in today's job market. Using pathfinders without confusion or difficulty becomes the responsibility of the library user, the student, the parent, and the librarian as public educator.

Contrary to what many library users think, the Internet is not the remedy for information problem solving. It is critical that librarians utilize a wide variety of resources while using the Internet as a research tool. Creating a pathfinder does not supercede other instructional efforts by librarians but by incorporating the necessary links to databases, public access catalog, indexes, newspapers, reference books, journals, etc. with instructional steps for use, the electronic pathfinder can reinforce library user needs to achieve information literacy standards in education and the workplace setting. A variety of teaching approaches are essential to ensure library users acquire critical information literacy skills needed to survive and navigate through a contemporary information-centered life.

Purpose of the Study

Selected electronic pathfinders for children age twelve and younger at public libraries in the United States and Canada were assessed as to their degree of conformity to criteria. These criteria included the variety of formats introduced, appearance (i.e. type size, white space), annotations, components, readability and whether they were effectively constructed to be used as starting points for further

research. Some research has looked at pathfinder collections for college students but no study has examined existing public library electronic pathfinder collections for children. The purpose of this research study was to examine existing public library electronic pathfinder collections for children and to develop a model pathfinder format based on the recommendations and practices of public libraries who use them. This research paper explains the relationship of instructional design models, information literacy skills, and the analysis of selected resources.

Research Questions

Question One

What are the components of the selected pathfinders in the research study and how well do they meet the identified criteria listed on the rubric?

Question Two

How do librarians create electronic pathfinders for children?

Question Three

What are recommendations for continued development for electronic pathfinders?

Definitions

Library user: One who utilizes the public library resources; synonymously used with library patron.

Public library: A library or library system that provides unrestricted access to library resources and services free-of-charge to all the residents of a given community, district, or geographic region, supported wholly or in part by public funds (Reitz, 2002, "P" Section ¶ 7).

Children: For purposes of this study children will be defined as public library users twelve years of age and younger.

Instructional design: Systematic development of instructional specifications using instructional and learning theories that include materials and activities to meet the needs and goals of learners (Berger & Kam, 1996, ¶ 1).

Model: An instructional system arrangement of resources and procedures to promote learning (Berger & Kam, 1996, ¶ 3).

Readability: For purposes of this study readability will be defined as information that is presented clearly and the type size is large enough for the children to clearly see; format is focused.

Information literacy: The ability to locate, evaluate, and use information to become an independent life-long learner and to be able to recognize when information is effectively used and communicated in its various formats to retain the necessary skills of information problem-solving (Wisconsin Educational Media Association, 1993, ¶ 1).

Lifelong learning: Intentional efforts of learners themselves to be self-managed, plan conscious assignments to be deliberate self-directed learners in proportion to their motivation, ability, opportunity provided and available to them (Candy, 1994, ¶ 3).

Resource-based learning: Exposure to and practice with diverse resources so that the achievement is of both subject and information literacy objectives (Stauffer Library, 1997, ¶.7).

Technology literacy: The ability to effectively access and communicate information by using media such as the Internet (Webster's II New College Dictionary, 1995, p.1132).

Computer literacy: The ability to use a computer and its software to accomplish practical tasks (Webster's II New College Dictionary, 1995, p.232).

Subject heading: A word or phrase used to describe the topic of a book, article, or other material in a library catalog or periodical index. Subject headings are sometimes called descriptors or identifiers (Library of Congress, 2003, ¶ 1).

Natural language: Asking a search engine a question in a very natural way, instead of having to group keywords together or use arcane syntax. This technology is still in its relative infancy. Natural language searching is great for asking general questions or getting general information (Tennant, 1981, p.ix).

Assumptions and Limitations

This study analyzed electronic pathfinder collections for children at selected public libraries in the United States and Canada. Results were limited to those yielded from researcher observations and email questionnaire responses. There is a gap in the literature evaluating content, use and design of electronic pathfinders within the field of library science. All of the data collected from library staff via email were expected to yield honest responses.

Organization of the Study

This study is organized into five chapters. Chapter one includes an introduction, statement of the problem, purpose of the study, significance of the problem, limitations of the study, organization of the study, definitions, and research questions. Chapter two contains the literature review. Chapter three contains the method of the study. Chapter four presents the findings. Chapter five includes the conclusion and summary.

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CHAPTER TWO

LITERATURE REVIEW

Information Literacy

Although alternate definitions for information literacy have been developed by various educational institutions, professional organizations, and individuals, they are likely to stem from the Final Report of the American Library Association (ALA) Presidential Committee on Information Literacy, “To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (1989, p.1). Since information may be presented in a number of formats, the term “information” applies to more than just the printed word. Other literacies such as visual, media, computer, network, and basic literacies are implicit in information literacy. There are reasons why information literacy is important: it is a prerequisite for participative citizenship, information literacy is required for the production of new knowledge on which the future economic success of all countries depends, and information literacy is needed to address global problems which challenge the planet and the survival of civilizations (Block, 2001, p.34).

Carol Kulthau summarized research that included library skills and computer skills in the definition of information literacy (Kulthau, 1987, p.6). The American Association of School Librarians (AASL) also became a part of the evolution of the concept

formulation of information literacy targeting libraries to develop standards into the library curriculum with their own publication in 1998 Information Power: Building Partnerships for Learning to validate and secure students' and staff members as effective users of information, consumers and researchers (ALA, 1998, p.x).

The three themes that predominate literature about information literacy research are: 1) information literacy as a process; 2) information literacy skills considered to be vitally important and essential as part of the teaching aspect of librarians in the context of overall student research and achievement; and 3) information literacy skill instruction must be integrated with the curriculum and reinforced both within and outside of the educational setting. Information literacy skills are vital to the future success of educating library users. These are important themes because the change from an economy based on labor and capital to one based on information requires information literate workers who will know how to interpret information (ALA, 1998, 8-9).

Barner, in his 1996 report on the new workplace indicated significant changes that will take shape and transform work in the future for managers and workers. The work force will be more diverse and the economy will increasingly be more global. The use of temporary workers will increase. These changes will require that workers possess information literacy skills to compete and survive in an economy where employees need to be computer savvy and be able to locate materials and resources independently. Rather than report to a hierarchical management structure, workers of the future will be required to actively participate in the management of the company and contribute to its success from skills acquired throughout years of education (Barner, 1996, p.15). The workplace will require workers who possess skills beyond those of reading, writing, and arithmetic.

State standards and information literacy skills terminology may differ, but all have common components relating to information literacy. Educational reform and restructuring make information literacy skills a necessity as students seek to construct their own knowledge and create their own interpretations. Educators are selecting various forms of resource-based learning to help students focus on the process and to help students learn from the content. These resource-based learning forms include authentic learning, problem-based learning and work-based learning. Information literacy skills are necessary for each of these forms of learning (Breivik, 1998, p.4). Library programs can foster information literacy by integrating the presentation of information literacy skills in curriculum areas at all grade levels. Information literacy efforts are not limited to the library field, but are also employed by regional educational consortia. Parents encourage their children to develop information literacy skills at home by contacting sources such as KidsConnect, the Internet help and referral service for K-12 students. Parents also help students' work through the information problem solving process as they assist their children with homework.

Information technology is the great enabler. It provides, for those who have access to it, an extension of their powers of perception, comprehension, analysis, thought, concentration, and articulation through a range of activities that include: writing, visual images, mathematics, music, physical movement, sensing the environment, simulation, and communication (Breivik, 1998, p.3). Technology, in all its various forms offers users the tools to access, manipulate, transform, evaluate, use and present information. Technology in schools includes computers, televisions, video cameras, video editing equipment, and television studios. Two approaches to technology in K-12 schools are

technology as the object of instruction approach, and technology as the tool of instruction approach. Schools and libraries are starting to incorporate technology skill instruction in the context of information literacy skills. Technology is changing the way higher education institutions offer instruction. The use of the Internet is being taught in the contexts of subject area curricula and the overall information literacy process. There is some empirical indication that students' who use technology as a tool may become better at managing information, communicating, and presenting ideas. "In the next century an educated graduate will no longer be defined as one who has absorbed a certain body of factual information, but as one who knows how to find, evaluate, and apply needed information" (Breivik, 1998, p.2). The ability to be information literate depends upon the willingness to be lifelong learners as people are challenged to master new technologies that affect work, school, home and student achievement.

The New Vocationalism

A key example of the economic shift in contemporary American society into Information Services was the publishing of the SCANS Report. In the fall of 1991, the (Labor) Secretary's Commission on Achieving Necessary Skills (SCANS) Report was published. It includes recommendations on those skills needed by all Americans for entry-level employment. These recommendations were phrased as outcome measures and included both foundation skills and competencies. The three-part foundation included basic skills, such as communication and understanding in reading, writing and speaking; thinking skills, such as problem solving, knowing how to learn, the generation of new ideas, setting goals, and choosing best alternatives; and personal qualities, such as responsibility, self-esteem, sociability, self-management, and integrity and honesty

(SCANS, 1991, p. xviii). There is a very close relationship between the full definition of information literacy and the recommendations of the SCANS report. This congruence is a powerful case for advancing information literacy. This is clear in the five competencies identified in the report. These are necessary skills for all entering the workplace. The five competencies include: identifies, organizes, plans, and allocates resources; works with others; acquires and uses information; understands complex inter-relationships; and works with a variety of technologies. While all of these conceivably relate to information literacy, number three directly addresses the same opportunities: to acquire and use information; to evaluate, organize, maintain information and to interpret and communicate information and to use computers to process information (SCANS, 1991, p. xvii).

In achieving these competencies library users will have mastered the skills necessary for lifelong learning and for providing information services to others in job related functions. Library users must learn how to acquire and organize information from sources that include information technologies. As they interpret and communicate their new understandings to others they demonstrate successfully their grasp of the three-part foundation of basic skills, thinking skills, and personal qualities (Ryan & Pritz, 1994, p.13). While the term information literacy is not explicitly mentioned in the SCANS Report, the five competencies mentioned in the report fit into the comprehensive definition of the term. The SCANS Report has outlined an extensive reform program for educators from a business perspective. The federal government also developed a reform agenda for education that fits closely with the SCANS Report in targeting needed changes that will also affect the library curriculum.

The Pathfinder Technique

As stated previously within this research paper, the Information Age is part of the new reality of working with students in education. Students turn to the Internet as their first and often only information resource - students want their information in full-text formats and online in an immediate fashion. Educators and parents who view results of this searching often have serious doubts about the rush to accept the first item retrieved from Yahoo! hit lists as an authoritative resource. Can library users retrieve in-house resources? Can library users locate credible information on the vast open Internet? Can library users identify key words to begin a search? These are questions raised in the library everyday. Librarians are asked to find the perfect solution. Librarians can create activities that encourage lifelong learning. One way is the electronic pathfinder technique. Patrons using pathfinders are assisted in learning how to do searches to work in the classroom, at home, and in their working life outside of school and to enhance their research skills.

Internet searching is a skill that can be taught and learned and is also a critical building block of Information Literacy. In response to perceptions of our students' attitudes, educators develop instructional models that provide students with the kinds of knowledge and hands-on experiences with web searching tools and strategies that they can use immediately and apply in other settings. Information Literacy is a basic skill in our increasingly complex, technological world. With so many information sources available, the ability to locate, identify and use reliable sources is critical for an educated populace. Information literate students are required to access needed information effectively and efficiently. Performance indicators for this include identification of

appropriate information systems and resources, developing effective search strategies, and retrieving the information. From experience with library users, it is noted that students are not effective web searchers despite their assertions to the contrary. The use of a common introductory place puts everybody “on the same page”. Improved web searching brings immediate positive results and helps students with their daily information needs across all levels of education. These instructional activities can easily be modified to match students’ ability levels due to the fact that occasionally there are students with almost no prior web experiences, and the activities, resources listed, and examples used can be adapted for different subjects and different levels of knowledge about subjects. Despite their usefulness, web searching skills and strategies are rarely directly taught and practiced in other areas in a systematic way. Developing a model can give us an opportunity to demonstrate a systematic approach to beginning searching and to teaching Information Literacy that can be applied in the library, classroom, at home, or in a job (Bergman, 2000, ¶ 12).

Once patrons understand the structure of the Internet and general search basics, librarians highlight examples of the following general categories of search tools that usually are misnamed search engines: directories, search engines, metasearch tools, kid’s search tools, specialized search tools. Kid’s search tools are an excellent way to show educators how to evaluate the reading level of a web page and to look at other factors like the depth of information included and the amount of advertising on a page. KidsClick! Search tool is excellent for identifying resources for elementary aged students, while Searchopolis has sets of links for elementary, middle, and high school students. Whenever assignments are given it is good to differentiate between Internet resources

that are appropriate for use by K-12 students and those that teachers would use for information (Bergman, 2000, ¶ 15).

A good electronic pathfinder is a well-organized list of links that is regularly maintained and is limited to a defined target audience - such as children. Collaboration among reference, children's services, and technical staff is necessary for furthering; developing and creating electronic pathfinders due to the shift from the sole responsibility of the collection development department (Grimes & Morris, 2001, p. 71). The emphasis should be placed upon the idea that pathfinders can be excellent starting points when information is needed. Some librarians have developed their own pathfinder pages so they become an excellent opportunity to point patrons to these local resources.

Wise in 1990 discovered that not only can pathfinders facilitate independent study, assist in cooperative learning; students using the tool would increase their independent research skills because pathfinders permit students more self direction and increase the efficient use of the library. The wealth of material on a specific topic provides structure and focus to facilitate independent study and research (Wise, 1990, p. 32). Wise identified a pathfinder model with strong potential to ensure an efficient and productive library experience. Wise quoted Alice Sizer-Warner (1983, p.151) about the benefits of using pathfinders in library work. Sizer-Warner stated:

Reference service is supported by the use of pathfinders because of time saved by both librarian and user, a heightened awareness of reference tools, creative achievement, increased focused interaction between staff and patron, and as a great public relations tool. Well-crafted library pathfinders complement the reference interview and the collection (Wise, 1990, p. 13).

The pathfinder model modified to provide more specific information in an annotated, organized list of sources by subject genre not by reference resource was created to focus the user on a topic to be explored. Wise set up collaboration with teachers to consult, brainstorm, and to choose topics that would integrate a section of the curriculum with the school media center. Wise selected teachers to work as consultants for each subject guide based upon the subject each teacher had the most knowledge of to confirm maximum relevancy for students. Lesson plans and textbooks were used as valuable resources for planning topics to develop pathfinders. Teachers found that the potential usefulness was appealing, and, used as a tool for students researching the topics, highly motivating because they could find and use resources in the school media center about teacher initiated assignments (Wise, 1990, p. 19). Teachers reviewed course outlines, identified questions and terms from lectures, and overall analyzed course content so that topics would be coordinated with classroom experience. Teachers found that creating pathfinders was useful as they taught similar concepts in the classroom (i.e. writing citations, locating and retrieving needed information for class assignments and research).

Suggestions made by the teachers for developing pathfinders include modeling the template free of excessive verbiage, automating pathfinders from print to electronic means accelerates the access process, and that using the pathfinder model would prove more effective to students so that they could follow “a self-paced course of instruction” (Wise, 1990, p. 15). These suggestions made by teachers illustrate the impact that technology has on students. Teachers concluded that pathfinders presented a successful model on which to pattern new instructional methods and that the school media center collections and resources could be utilized to their fullest advantage by using pathfinders

(Wise, 1990, p.16).

Materials made available on the pathfinder went beyond what teachers either would retrieve or would have known about without collaboration. The time constraints for teachers were a considerable reason for developing the pathfinder model and to increase efficient use of the library. Wise concluded that pathfinders are “focused tools” that put the user immediately in touch with useful material (Wise, 1990, p. 32).

Block claimed that directly teaching terms and databases and really good resources on the web and in the library inspired students to do research even on their own time as a challenge that can be readily accepted and achieved. Teaching keywords, related keywords and subject headings started students placing topics in a research-centered position. Students learned the process and took enhanced research skills from the library experience to school, work, and daily living skills for the modern world (Block, 2001, p.34).

Block also suggested building a pathfinder web page to make it easier for students to find quality material and provide genuine topics of interest for required term papers. Similar to Wise’s conclusions, Block said librarians could build pages for those assignments for each department around predictable school assignments that arouse interests (i.e. politics, current events) (Block, 2001, p. 33). Block also added that librarians give an added advantage by guiding users to the “invisible web” of fee-based and free resources, full-text articles, and highly relevant key subject headings and phrases that general search engines do not identify. This process in essence teaches a library user how to refine a search so that students get better results (Block, 2001, p. 34). Students learn the process of doing research and take the skills from the library experience and

encounters with staff with them throughout their school, work, and daily living skills for today and beyond.

Elliot described how teachers utilize several teaching strategies and instructional design models to make use of abundant information available on the Internet. Key word skills can be taught to encourage students to use online sources that are available in the media center and public library using Boolean logic. Pathfinders develop information literacy skills by using the instructional models and templates to organize materials that create problem-solving and critical thinking skills that improve reading, writing, and research skills (Elliot, 2000, p.92).

Dahl researched electronic pathfinders in academic libraries to analyze their content and form. Overall readability, consistency, scope, and effective design were assessed. The analysis illustrated that some pathfinders were more complex and less useful than others and demonstrated that “specific guidelines” need to be created for electronic pathfinders because the current literature does not address particular problems developing an electronic pathfinder collection (Dahl, 2001, p. 230).

Dahl explained one of the benefits of maintaining an electronic pathfinder collection was that a well-crafted pathfinder available online can be used by people who are not in the library itself and can be accessed from remote locations. Consistency and manageable scope of each pathfinder must be readable to the user because they are intended to be reliable and appropriate guides for student researches; they need to be developed in brief yet simple scope (Dahl, 2001, p. 227). The design of Dahl’s study intended to bring attention to the idea that information is not contained within one persuasive printable resource. Dahl defined consistency of format and information referred to “the degree to

which the pathfinders from each library resemble each other in terms of type of information provided and form of presentation...to facilitate ease of use if more than one pathfinder is consulted and visually unifies the publications of the library...simple and direct in structure” (Dahl, 2001, p.232).

Dahl defined scope as coverage of one subject that was reflective of good use- not too narrow and not too broad. The scope of a specific subject should include a full range of resources with manageable boundaries. Readability was included as an important aspect of a pathfinder because ensuring that one can navigate and understand the pathfinder without confusion or difficulty would include descriptive annotations and that web links be updated and current (Dahl, 2001, p.227). The use of the pathfinders was examined to assess the list of different types of resources to help students do independent research rather than serve as mere bibliographies. Dahl concluded that the emergence of creating electronic pathfinders has raised the need to assess current guidelines for creating pathfinders. The unique electronic pathfinder format has rendered existing guidelines inadequate and therefore needs modification to guidelines used solely for print handouts.

Annis reminded us of the marketing value of creating electronic pathfinders by promoting advertising “for the user”, not society or the community or becoming a lifelong learner. Annis stated that exciting marketing can bring in potential and actual users by making services more visible. To create a good marketing campaign designed around the electronic pathfinder collection, Annis suggested posting handouts in newspapers, to small businesses, to parents, and to students. This marketing process can enable the librarian to form alliances and associations to make the product a visible commodity to taxpayers who support the library, the school board, the town council, and

parent body (Annis, 1997, p.10). Using the Internet, home access, a method can be planned that informs consumers of what the library has to offer that can also parlay into other services. Looking more closely at current networks and the efficiency of interlibrary loan would also need to be addressed. Hopefully, the library can be looked at as “exciting technology users – not as simply technology users” (Annis, 1997, p.12).

Use of Models in Information Literacy

The Big 6, Flip it, Super 3 and I-Search are design models that describe the information search process. The pathfinder technique works with these models as a teaching-learning activity. Parents can play an important role in helping their children succeed, but they need an effective approach in order to do this well. The Big Six Skills apply to any problem or activity that requires a solution or result based on information. An abundance of information is available from many sources, and the Big Six can help parents effectively deal with that information to guide their youngsters through school assignments and challenges at that library (Eisenberg & Berkowitz, 1992 p. 27).

The Big Six approach has six components: task definition, information seeking strategies, location and access, use of information, synthesis and evaluation. The Big Six approach requires parents and students to assume different roles. The parent assumes the role of the “coach” and the child assumes the role of “thinker and doer” (Needham, 2002, p.20).

As a mentor, the parent can use the Big Six Skills to guide the student through the steps it takes to complete an assignment. Parents can help by asking their children to explain the assignments in their own words. This is called “task definition” or logical first step. Parents can also help by discussing possible sources of information. Parents then

helping their children implement information seeking strategies to finding useful resources is called “location and access”. Location and access that may have to be repeated during an assignment because some children do not identify everything they need from the beginning. Parents can facilitate by brainstorming with their children about alternate places where information might be available much like librarians to ensure that their child is ready to tackle the challenge of completing assignments (Needham, 2002, p.20).

In the “use of information” stage, parents can discuss whether the information the child located is relevant to the topic presented and if so, can the information help the child decide how to use it. In the “synthesis” stage, parents can ask for a summary of the information in the child’s own words, and ask whether the information meets the requirements identified in the “task definition”. The end of the assignment is the final evaluation of all the work that has been done. Parents can help their children with this stage by discussing whether the product answers the original question and whether the project could have been done more effectively (Spitzer, 1991, p.117).

As children work through each of the Big Six stages or steps, they need to think about what they need to do, and then they need to find appropriate ways to do it. This is their role: “thinker and doer”. Children should be encouraged to be as independent as possible, but they will often have difficulty beginning an assignment because they are confused about what to expect. Whatever the reason is for their inability to get started, students have the ultimate responsibility for getting their work finished. When parents act as “coaches”, they can help their children assume this responsibility by engaging them in dialog about what is expected of them and then guide them throughout the assignment

using these skills (Needham, 2002, p.20).

The Big Six approach recognizes the benefits of technology in education because computers are tools that help organize information, construct outlines, and help with time management, setting priorities, and evaluating efficacy of work completed. The Big Six approach can help parents effectively guide their children through assignments and at the same time help their children become independent learners and users of information that will parlay into their information-centered life (Konecki, 1992).

Adapting the Big 6 process for younger students is discussed by Needham (2002, p. 20). The Super 3, or early childhood version of the Big 6 skills, can be used with students in kindergarten through second grade to solve information problems. The three steps are: Plan, Do, and Review (because the Big 6 steps are difficult for some young students to remember). Needham developed a mnemonic to work with both programs. The mnemonic resembles an Internet address to encourage memory about the research process. The mnemonic (WWW.USE) can be translated for: What, Where, Use, Synthesize, and Evaluate (Needham, 2002, p.20).

During the “Plan” step students begin with task definition to decide what is needed, perform information seeking strategies to discover what sources can be used, while locating and accessing information sources the student decides where these sources are and where the information in the sources is located. The “Do” step involves the use of information, collecting information from needed sources and the use of a data chart and note taking skills that help with the next phase – synthesize. Synthesizing during the “Do” step means to put together the final product. The final step is to “Review”. Needham mnemonic reminds the younger students to evaluate and to ask themselves “did

I do what I was supposed to do in step one? ". Typical information problem-solving projects complete by the third through fifth grade students are too complex to meet the needs and abilities of the younger grade students in kindergarten through second grade. However, utilizing these programs allows the possibility for educators to begin teaching an information problem-solving process (Needham, 2002, p.20).

Yucht developed a four-step strategy to help children solve information problems independently by simplifying tasks to approach complicated assignments. Students become self-directed by using critical thinking skills, a constructivist approach to learning, and as effective explorers to solve problems. FLIP IT! is a simple information processing framework to help students deal with the process of research. The four steps include: Focus, Locate/Links, Input/Implementation, and Payoff/Produce (Needham, 2002, p.20).

Focusing in on a target to figure out the specific question and realize the question and types of data to work with to answer the targeted question is the first step. Then, the student makes the connections that link resources, keywords, and proceed in a logical way efficiently and effectively. The third step involves input from the student so that the acquired information can be interpreted to decide whether the information is needed and also organized, categorized, prioritized, inferred, recorded, acknowledged, and implemented into the research process. Finally, the payoff is what the student learns from their effort to produce a required outcome that can be communicated and presented (Needham, 2002, p.20).

The mnemonic FLIP IT! assists students to remember the different stages in processing information and doing independent research. Educators agree that a consistent

approach is needed so that students develop their own way of creating strategies using information literacy skills for lifelong learning. Evidence indicates that students understand and use sophisticated terminology in the writing process and the debate continues with professional educators if in fact that there are seven, rather than four, or even six stages in the information research process (Davies, 1998, p. 39).

The I-Search Adventure gives credit to all parts of the research process as important. This is accomplished by completing four phases or stages that build research, reading and writing skills. Teachers and students collaborate to brainstorm about what the student needs to know and also what the student would like to know. This stage is called Immersion. Phase II includes Searching and Planning to develop a course of action (i.e. timetable or calendar). In this phase the researcher builds resources and makes a list. Phase III integrates many information gathering activities that engage the student to survey, interview, and read. This stage is called Gathering The Goods. The questions from the first phase are answered by eliciting information from the resources and writing in essay form how the answers to the student's question were found. The last Phase is called Writing and Presenting allowing students the step needed for revision and editing and a place to showcase their work (i.e. exhibit, museum) as part of the I-Search Adventure. References are included as part of the bibliography where citations are clear and in MLA format. Title and cover page, table of contents, and dedication page can be included as optional pages as a part of the adventure of research (Ronan & McDermott, 1999, p. 2). I-Search activities can easily integrate technology that makes assignments interesting to students not only to collect information, but also to organize and convey the information in a meaningful way (Zorfass & Copel, 2000, p. 3).

Summary

The pathfinder technique has been shown to enhance research skills. The use of models of information literacy have been shown to enhance information problem-solving processes. These processes and techniques help students to solve information problems independently. Breivik explained, "In the next century an educated graduate will no longer be defined as one who has absorbed a certain body of factual information, but as one who knows how to find, evaluate, and apply needed information" (1998, p.2). Changes in the economy will require workers of the future to actively participate in the management of the company and contribute to its success from the skills acquired throughout years of education. The workplace will require workers who possess skills beyond (the three "R's") those of reading, writing, and arithmetic (Barner, 1996, p.15).

Electronic pathfinders for children are a part of the Information Age to get children to work independently, use technology skills, locate information, retrieve needed information, and learn how to do research. Electronic pathfinders are a tool used by libraries to facilitate independent study and permit students more self-direction by providing a structure and focus for students to begin research.

A well-structured pathfinder allows students to learn the process of research by making complex interrelationships of keywords and search phrases that they will take with them from the library experience to school, work, and daily living skills for the modern world (Block, 2001, p.34). Manageability, consistency, scope, and readability are important components to those creating electronic pathfinders for children and more research needs to be designed particularly addressing these needs to create specific guidelines so that the user can utilize the service without difficulty or confusion.

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CHAPTER THREE

METHODOLOGY

Overall Design and Justification

This study was designed to be an applied research study to analyze content, appearance, and format of electronic pathfinders for children from various public libraries in the United States and Canada and to inquire of those responsible for creating these electronic subject guides. The researcher investigated how many individuals and which departments of the public libraries were responsible for the creation, dissemination, and maintenance of electronic pathfinders for children to illustrate the potential shift in responsibility from collection development or children's services to other departments within the library such as technical services, reference, and committees.

The study was conducted using two techniques. One was the distribution of an email questionnaire to ten selected public libraries in the United States and Canada. The design of an email questionnaire (see Appendix A) was selected as a qualitative research technique to increase the researcher's familiarity with the phenomenon in question, to establish priorities for future research, identify new problems, and gather information with practical applications. A rubric (see Appendix B) was also used to analyze the content of twenty-four selected electronic pathfinders from the ten public libraries' collections to provide insight and suggestions for future research, use, and design. From this perspective, the researcher intended to provide insight and make suggestions for

future research from the data collected to bridge a gap in the literature found in designing electronic pathfinders for children.

The email questionnaire was selected because of time constraints and so that the respondents could complete the questionnaire without the researcher being present. The respondent was guaranteed anonymity and encouraged to provide honest answers in order to eliminate interviewer bias. The fixed format of the questionnaire was chosen to eliminate variation of responses as compared to a question-interview. While content and organization did not change, the possibility of respondents interpreting the same questions in different ways was present (Powell, 1997, p.90-91).

Statement of Purpose and Research Questions

Selected electronic pathfinders for children age twelve and younger at public libraries in the United States and Canada were assessed as to their degree of conformity to criteria. These criteria included appearance (i.e. white space, type size), annotations, components, readability and the variety of formats introduced to measure whether the pathfinders were effectively constructed to be used as starting points for self directed learning. Some research has looked at pathfinder collections for college students but no study has examined existing public library electronic pathfinders for children. The purpose of this research study was to examine existing public library electronic pathfinder collections for children and to develop a model pathfinder format based on the recommendations and practices of public libraries who use them.

Research Questions

Question One

What are the components of the selected pathfinders in the research study and how well do they meet the identified criteria listed on the rubric?

Question Two

How do public librarians create electronic pathfinders for children?

Question Three

What are recommendations for continued development for electronic pathfinders?

Population and Sample

A convenience sample was selected because of the availability of public library electronic pathfinder collections for children online. There is no precise way of generalizing from a convenience sample to a population. Therefore, an email questionnaire (see Appendix A) was mailed to the children's services department at each of the ten public libraries selected for this study to add credibility to the research, assure receipt of needed information, assure high participation rates, and ease of administration. The sample of twenty-four electronic pathfinders while not representative of the total population of electronic pathfinders for children available, the results may reveal attributes and variables that can be identified in future research about electronic pathfinder design and children and the need to provide specific guidelines and model for creating electronic pathfinders in the future. A list of the ten library sites investigated is located in Appendix C.

Variables

A variable is a label that represents a concept that takes on different values or categories. An attribute is the value or category of a variable that can be measured and described (McMillan, 2000, p. 28). The variables in this study include the eight criteria listed on the rubric (see Appendix B), the individuals involved with creating topics and formats for children, how the electronic pathfinders for children were maintained, and how the electronic pathfinders for children were developed. The eight criteria listed on the rubric included scope, vocabulary, print resources, online resources, general comments about the resources, format and organization, content, and appearance.

Email and Telephone Survey Design

There were two techniques used to collect data. The techniques of data collection for this study were a self-administered email and telephone questionnaire and content analysis using a rubric. The email and telephone questionnaire was a modified version of a survey sent to academic libraries by Grimes and Morris in 2001. The modifications were made to identify how public libraries and children's services develop and maintain electronic pathfinders for children rather than how academic librarians develop and maintain Internet based subject guides. The email questionnaire was sent to each of the ten selected libraries and mailed directly to the children's services department. The introduction requested the children's service librarian to forward the survey to someone at the library who was best suited to answer the questions about creating electronic pathfinders for children. Web masters, technology and systems librarians and administrators were contacted. A follow-up telephone call was performed to answer questions not answered from the email survey.

Pathfinder Analysis

The researcher selected three electronic pathfinders at random from each of the ten libraries for analysis. Libraries A, B, and C had only one online pathfinder in their collections, therefore, only one pathfinder for children was examined from Libraries A, B, and C. A total of twenty-four electronic pathfinders were analyzed from a total of four hundred and ten online examples. Analysis was accomplished by using a rubric (see Appendix B). Items ranked ordered on the rubric range from level zero to level five. Zero = item does not exist; One= somewhat adequate; Two=adequate; Three=good; Four=very good; Five=excellent. Scope, vocabulary, print resources, online resources, general comments about resources, format and organization, content, and appearance were analyzed for each electronic pathfinder selected. The components selected were arranged in a rubric from sources found from a general search on the Internet. Criteria for the evaluation of pathfinders and a pathfinder grading criteria form were modified from the University of Oklahoma Library and Information Science academic program. Other useful sources were examined from the Rowan University academic program for librarianship about what to include in designing electronic pathfinders and general conceptual models for research projects and reading guidance by genre or subject . Content analysis revealed strengths and weaknesses in the design of electronic pathfinders for children. The results and findings are discussed in chapter four and chapter five.

Reliability and Validity

The design of the study was reliable because use of the rubric and email questionnaire can be replicated, and applied beyond this study. The rubric measures constructs as represented by variables that can be defined as a set of categories or scale

based on criterion evaluating pathfinders. Five academic web pages were consulted to determine categories under investigation from university library and information science programs. Identifying eight components to evaluate twenty-four selected pathfinders was accomplished by considering what to include, how to evaluate electronic pathfinders from conceptual models, and adapting a rubric retrieved from the World Wide Web. The categories were modified to address public libraries and children's services. This is an unobtrusive means of analyzing data that allows for interpretations such as the development of an expert system that identify specific guidelines (knowledge and rules) about creating and maintaining electronic pathfinders for children. The tendency to code and classify categories in the same way can be repeated and is considered stable (Palmquist, p. 2-4).

The questions from the email questionnaire were taken from a survey comparing academic library webliographies conducted by Grimes and Morris (2001, p.76-77). The modified questionnaire contained a total of eight questions that can be answered easily by checking yes or no, selecting from a given set of responses in a structured format, and additional space for comments.

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CHAPTER FOUR
ANALYSIS OF DATA

Introduction

The research questions for this research project divided into three areas: 1) content analysis using criteria with the twenty-four electronic pathfinders chosen for investigation; 2) email questionnaire responses of the librarians; 3) and, other comments made by librarians.

Research Question 1

What are the components of the selected pathfinders in this study and how well do they meet the identified criteria listed on the rubric?

This section is divided into eight parts to include tables regarding the eight criteria listed on the rubric for content analysis. Zero indicates item Does Not Exist; one indicates item exists and is rated as Somewhat Adequate; two indicates the item exists and is rated as Adequate; three indicates that the item exists and is rated as Good; four indicates that the item exists and is rated as Very Good; And five indicates the item exists and is rated as Excellent.

Table 1 reports the percentages of responses to the three categories of Criteria One of the rubric. A total of 25% of the selected electronic pathfinders for children defined the topic of the electronic pathfinder clearly but more than 70% did not. More than 70% of the selected electronic pathfinders for children ranked less than three, indicating that

29.2% did not identify the topic in paragraph form or that there was no statement made as to what the topic of the electronic pathfinder for children was about. The purpose for most of the electronic pathfinders was not clearly defined. The intention of what to do with the information was either not written or less than good. In most cases, 66.7%, the purpose of electronic pathfinder was either non-existent or inadequate. A total of 33.4% ranked good, very good, or excellent. The one category that rated highest is illustrated by a total of 79.2% of electronic pathfinders did clearly identify the intended audience and/or grade level.

Table 1 Criteria 1 Statement of Scope N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Topic is clearly defined	7	9	1	1	0	6	1.8
Purpose is stated clearly	10	2	4	1	1	6	1.9
Audience is specified and described	0	0	4	1	3	16	4.2

Table 2 summarizes the responses to the two categories of criteria two on the rubric. Relevant controlled vocabulary was identified for the user to search the catalog and/or Internet in 91% of all the electronic pathfinders under investigation. A total of 79.2% of all the electronic pathfinders analyzed scored three or better. A total of 71% of all the electronic pathfinders analyzed scored a five in the category for providing call numbers and areas for browsing.

Table 2 Criteria 2

Vocabulary

N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Controlled terms specified	2	0	3	4	4	11	3.7
Call numbers and areas provided	1	0	2	4	0	17	4.2

Table 3 summarizes the responses to the four categories of criteria three on the rubric.

A total of 95.8% of all the electronic pathfinders under investigation did list print materials appropriately for the topic. A total of 79.2% scored three or better revealing title categories listed in an organized, logical and defined fashion. A total of 83.3% of all electronic pathfinders analyzed did not have written annotations for fiction, non-fiction or reference print resources and did not convey the value of the sources cited.

Table 3 Criteria 3

Print Resources

N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
List is topic appropriate	1	0	3	6	2	12	3.8
Title categories are logical	1	0	4	7	0	12	3.7
Annotations are present	20	0	0	1	0	3	.75
Annotations convey value of the source.	20	0	0	1	0	3	.75

Table 4 summarizes the responses to the five categories of criteria four on the rubric. A total of 62% of all electronic pathfinders for children provided written annotations for online resources. A total of 37.5% did not provide written annotations nor convey the value of the sources cited. A total of 87.5% scored four or better when reviewed for selectivity of materials. A total of 95.8% of all electronic pathfinders for children scored at least two (adequate) for items selected as topic-appropriate and organized into logical categories.

Table 4 Criteria 4 Online Resources N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Annotations are present	9	0	0	1	2	12	2.9
Annotations convey value	9	0	0	2	8	5	2.6
Items are selective	0	3	0	0	6	15	4.2
Items are topic appropriate	0	1	0	0	8	15	4.5
Resources organized	1	0	2	4	3	14	4

Table 5 summarizes the responses to the three categories of criteria five on the rubric. A total of 100% of all electronic pathfinders for children analyzed scored three or better for clearly defining pathfinder categories and selecting age-appropriate and on-topic resources. A total of 95.9% scored at least two (adequate) about providing a variety of formats for both print and non-print materials and resources.

Table 5 Criteria 5

General Comments about Resources

N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Resources are appropriate	0	0	0	9	5	10	4
Defined categories	0	0	0	6	6	12	4.2
Variety of formats	0	1	3	7	6	7	3.6

Table 6 summarizes the responses to the eight categories of criteria six on the rubric. A total of 100% scored two or better for providing a functional design. A total of 91.8% scored three or better for providing complete citations for print and non-print materials. A total of 62.5% provided no bookmarks for users to navigate the page. A total of 45.8% provided a navigation bar so that users could go directly to different categories

Table 6 Criteria 6

Format and Organization

N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Functional	0	0	1	11	6	6	3.7
Complete citations	0	0	2	14	7	1	3.2
Online links direct	0	0	0	5	1	18	4.5
Selective resources not comprehensive	0	0	0	4	7	13	4.3
Grammatically correct	0	0	0	3	20	1	3.9
No typos or spelling errors	0	0	0	1	22	1	3.7
Bookmarks present	15	0	0	1	0	8	1.7
Navigation bar present	14	0	0	0	0	10	2.2

Table 7 summarizes the responses to the seven categories of Criteria Seven on the rubric. A total of 66.7% did not provide a written introduction to the specific topic for the electronic pathfinders. A total of 100% scored three or better for selecting high-quality materials, balanced sources; providing selective resource not found in cursory searches, including either author or date of the creator, interesting topic, and validating links to online resources. A total of 100% scored four or better selecting a topic that was interesting.

Table 7 Criteria 7 Content N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Topic is interesting	0	0	0	0	3	21	4.8
Introduction is well-written	15	2	0	2	1	4	1.2
Materials are of high quality	0	0	0	0	6	18	4.7
Sources are balanced	0	0	0	2	7	15	4.5
Sources are selective	0	0	0	0	2	22	4.9
Web links validated	0	0	0	4	1	19	4.6
Signed and dated	0	0	3	2	11	8	4

Table 8 summarizes the responses to the seven categories of criteria eight on the rubric. A total of 100% of all electronic pathfinders under investigation scored three or better for providing an interface that is clear, easy-to-read, and printer-friendly by logically dividing the pathfinder into categories and maintaining consistency throughout the design.

Table 8 Criteria 8 Appearance N = 24

Category	Rating Item does not exist	Rating Item is somewhat adequate	Rating Item is adequate	Rating Item is good	Rating Item is very good	Rating Item is excellent	Rating Mean Score
Interface is clear	0	0	0	8	4	12	4.1
Sources divided into categories	0	0	0	7	6	11	4.1
Format is consistent	0	0	0	6	5	13	4.2
Book titles and links differentiated	4	0	1	6	3	10	3.4
Design meets user need	0	0	0	1	6	17	3.7
Adequate white space	0	0	0	1	6	17	4.6
Type size is legible	0	0	1	9	4	10	3.9

Research Question 2

How do librarians create electronic pathfinders for children?

Response Rate

Five out of ten librarians responded to the first email questionnaire distribution (50%). The five librarians who responded to the email questionnaire were all from the United States. All respondents currently worked at the libraries and were responsible to some extent to posting electronic pathfinders for children. All respondents were librarians. The analysis in this chapter therefore based on responses of the different types of librarians who were sent the email questionnaire. Follow-up telephone calls were made to obtain answers to questions not answered. Additional comments were recorded and are discussed in the third section of this chapter.

Characteristics of the Respondents

Respondents were asked to indicate their primary job title and list all other persons in a category who contributed to the creation of the electronic pathfinders for children. Two responses indicated that they were in library administration either as assistant director or manager of children's services. The largest portion of respondents indicated that they worked directly with technical services as web master, technology librarian, or systems librarian to create electronic pathfinders for children. Table 9 presents the responses made by the respondents about the teams of people responsible for creating electronic pathfinders for children.

Table 9 summarizes the responses made from the email questionnaire. The responses made to questions 1, 2, and 3 indicate the responsibility of creating electronic pathfinders for children did not reside solely with the children's reference librarian but rather indicated librarians working in other departments were assisting creating and maintaining electronic pathfinders for children at different libraries.

Table 9 Individuals Responsible for Creating Electronic Pathfinders

N = 5

Title	Count
Web Master	4
Reference Librarian	3
Subject Bibliographer	1
Children's Librarian	3
Other:	
Administrator	2
Systems Librarian	1
Technology Librarian	4

* Note: total equals more than five, as respondents were asked to select more than one response.

Selection of Topics

Question 4 on the email questionnaire asked each respondent how their library determined what topics or subjects were chosen for children's electronic pathfinder collections. Responses included meeting the needs of the users, pursuing a common intellectual developed project, and having information made available to students in school so that all children are able to locate and retrieve the information needed for a scheduled project. One respondent stated that no patron input is used to select topics and that their library only used input from public librarians in the form of committees to develop ideas and topics. Another respondent indicated their library only selected topics after consulting with local teachers and new topics required a teacher request form to be completed before any research and collection of resources were initiated.

Frequency of Updates

Question 5 asked the respondents how often the Internet based pathfinders for children were typically updated. Three respondents indicated that the electronic pathfinders for children are updated once a year and usually in the summer months. Two responses indicated that their Internet based pathfinders were usually updated at least once a month but sometimes more frequently when the need arises for a web address or book to be deleted or changed.

Soliciting and Using Patron Input

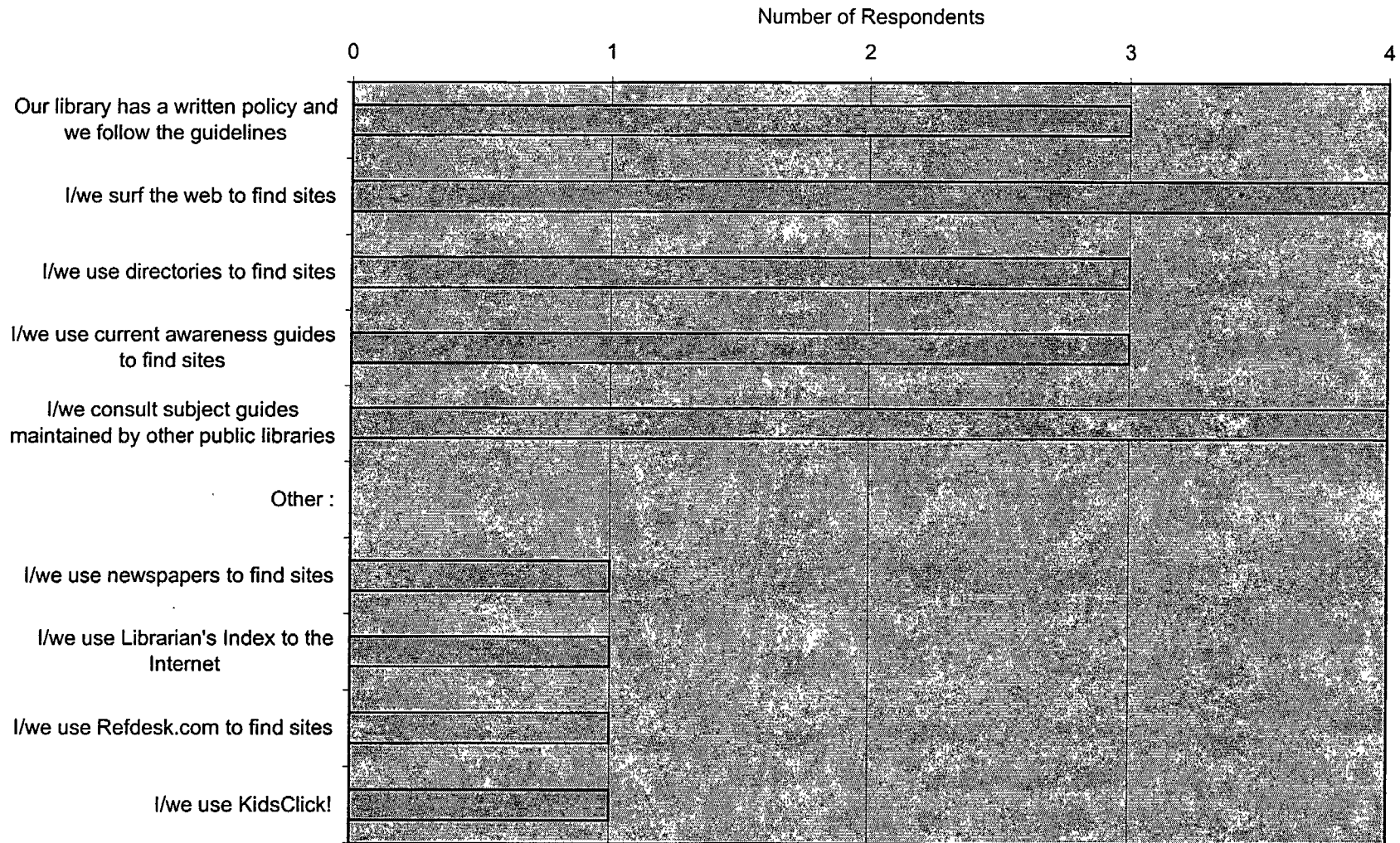
Question 6 asked the respondents if their library solicited and used patron input when creating or maintaining the Internet pathfinders for children. Three respondents answered yes to this question. Only two respondents answered no. One response made indicated

that the library staff considered themselves as dual-role librarians including themselves as both patron and librarian. Responses indicated that they welcomed suggestions made by both patrons and staff and encouraged involvement in the process of deciding topics, subjects to explore, and overall resources to use. One response reflected the ongoing relationship of the teachers and librarians coping with many information requests and presenting topics for school assignments that were assigned year after year. Feedback was welcomed and encouraged from parents and students so that they would feel like they were a part of the process and that they owned a page in their community library.

Selection of Internet Web Sites

Question 7 asked the respondents how their library selected web sites for inclusion as Internet based pathfinders. Four respondents indicated that the library staff consulted subject guides maintained by other public libraries and that they surfed the World Wide Web to find sites. Three respondents indicated that they use directories, awareness guides, and follow a written policy and guidelines to find sites. Other responses included using KidsClick! Search engine, Virtual Reference Desk, and Librarian's Index to the Internet and newspapers to find sites as part of the web inclusion process. Figure 1 summarizes responses to question seven.

Figure 1 Web Site Inclusion Process



Validating Links

Question 8 asked the respondent how they ensured the links were valid. Responses were unanimous. All respondents indicated that the library had software that automatically checks the links but that they still manually checked the links because the software only indicated that a link was dead and did not identify a new web site address. The software allowed for the librarian to know when an update was needed but that the librarian in charge had to change the link manually.

Research Question 3

What are recommendations for continued development for electronic pathfinders for children?

Many respondents remarked that the library was always revising web sites to add to current pages and so that print pathfinders could be changed to electronic form for more access from home or school. One respondent noted that the creation of the electronic pathfinders for children was accomplished by the children's reference staff and that the technology librarian or systems librarian merely posted the work that was complete. For others librarians the sole responsibility for selecting topics and creating the web sites and electronic pathfinders remained with the web master. Four respondents indicated that each library has their own distinct system for developing, creating, and maintaining electronic pathfinders for children. Many of the topics were selected to compliment the reference and general collections.

Program and product development were a large part of promoting the collection for specific reading programs. All respondents clearly indicated that there was an increase and strong desire in using the library efficiently, and that using electronic pathfinders for

children was a great way to accomplish this task. Most of the respondents indicated that the time spent creating the pages was well spent when users were better able to use the library in an independent fashion.

Many librarians noted that anxiety quickly turned to relief once a young patron found the identified information needed for an assignment. These were motivating factors that the respondents indicated when providing additional comments. No library was the same due to changes and differences in personnel, budget, or institutional resources and therefore respondents indicated that it would be difficult for specific guidelines to be made for creating and maintaining electronic pathfinders for children. One respondent stated that creating and designing an electronic pathfinder was just like pulling books and placing them on a truck to prepare the users for their experience in the library; except that it was being done in a new form and medium that involved pulling web sites and articles. All respondents indicated that they had experience working in children's reference either currently as a reference librarian or in the past before moving into technical services.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Summary

Electronic pathfinders for children add another dimension to using the Internet as a research tool. While assisting students in developing a search strategy, they also help direct them to a variety of resources. Since students are becoming more dependent on the Internet as a primary source of information, the electronic pathfinder is designed to eliminate the frustration locating information on the Internet, provide students with alternate resources to use locating answers to questions, instruct students on how to identify appropriate subject headings and keywords to use searching for information relevant to the topic, and provide a path for students to follow, enabling them to focus their research and target the most appropriate resources.

Contrary to what many library users think, the Internet is not the remedy for information problem solving. It is critical that librarians utilize a wide variety of resources while using the Internet as a research tool. Creating an electronic pathfinder for children does not supercede other instructional efforts made by librarians but by incorporating the necessary links to databases, indexes, public access catalog, newspapers, reference books, journals, etc. with instructional steps for use, the electronic pathfinder can reinforce library user needs to achieve information literacy standards in education and the workplace setting.

The pathfinder technique has been shown to enhance research skills. Electronic pathfinders for children are a part of the Information Age to get children to work independently, use technology skills, locate information, retrieve needed information, and learn how to do research. Electronic pathfinders for children are a tool used by libraries to facilitate independent study and permit students more self-direction by providing a structure and focus for students to begin research.

A well-structured pathfinder allows students to learn the process of doing research by making complex interrelationships of keywords and search phrases that they will take with them from the library experience to school, work, and daily living skills for the modern world. Manageability, consistency, scope, and readability are important components to those creating electronic pathfinders for children so that the user can utilize the service without difficulty or confusion.

The purpose of this study was to analyze selected electronic pathfinders for children to assess their degree of conformity to criteria by using a rubric; to examine how librarians create electronic pathfinders for children; and to develop a model pathfinder format based on the recommendations and practices of public libraries who use them.

Conclusions

Content analysis revealed that the majority of electronic pathfinders analyzed had low mean scores (below 2.2) in six categories. The majority of electronic pathfinders analyzed did not provide a topic statement, an introduction, or present a statement of purpose. Nor did the majority of electronic pathfinders analyzed provide annotations for print resources (including fiction, non-fiction, and reference materials). The use of bookmarks and navigation bars were not included as part of the design.

In Criteria One the categories “topic is clearly defined” and “purpose is clearly stated” received mean scores of 1.8 and 1.9. While librarians are good at identifying the audience (4.2 mean) they clearly do not follow through on stating the purpose and defining the topic. In Criteria Three the categories “annotations are present” and “annotations convey the value of the source” both received mean scores of .75. While librarians are good at creating a list that is topic appropriate (3.8 mean) and dividing title categories into logical sequence (3.7 mean) they clearly are not assisting students in developing a search strategy or directing them to how to use a variety of resources enabling children to use the resources without assistance. In Criteria Six the category “bookmarks are present” and “navigation bar is present” received a mean score of 1.7 and 2.2. Without these structures applied to the design children are not able to use the electronic pathfinder as a research tool. In Criteria Seven the category “introduction is well-written” received a mean score of 1.2. Librarians are not, in these cases, providing a purpose as to what to do with the given materials. The electronic pathfinders are not serving a major purpose as a research tool. The absence of these categories does not provide a path for students to learn independently or eliminate the frustration of locating information.

Content analysis revealed that the majority of electronic pathfinders analyzed had high mean scores (3.7 and higher) in 13 categories. The majority of all the electronic pathfinders for children analyzed did reveal that resources chosen were selective, organized, topic-appropriate and clearly divided and defined into logical categories. Web links were direct in the majority of electronic pathfinders analyzed and topics selected were interesting. The interface presentation was clear and easy-to-read and the general format was consistent throughout the design, call numbers and areas for browsing were

provided. In these cases, a structure and focus provided in the design allow students to locate materials relevant to the topic enabling children to focus their research.

Respondents to the email questionnaire indicated that creating electronic pathfinders for children involved more than one librarian. Respondents indicated that changing pathfinders from print to electronic format required the library staff to change their traditional ways of allotting staff resources. Selecting topics was different at most libraries but the typical librarian looked for and used patron input. Updating the electronic pathfinders in most instances occurred once a year. Selecting web sites for inclusion was made by consulting subject guides and/or surfing the World Wide Web. Validating web links manually and using software that identifies dead links was common practice. Overall, to create electronic pathfinders for children respondents indicated that a team approach is necessary.

Implications of the Study

Since the rubric used in this study was designed as a model, libraries can use it to identify strengths and weaknesses of their electronic pathfinder collection for children to modify or revise specific, target areas. Librarians can initiate and create electronic pathfinders as a starting point by using the rubric as a model. Each criteria and category can be used to evaluate and make alterations and changes to existing design. The rubric also can serve as a model format to help librarians in all types of libraries and for different age groups.

Recommendations for Future Research

Repeating this study to identify categories to be included in the design of electronic pathfinders for adults, teens, and school libraries can be accomplished. Use of the rubric will determine if new or existing electronic pathfinders fit the model. The email survey can be modified to address special, academic, or school library interests.

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Appendix A

Appendix A

Email Questionnaire

Please find below a questionnaire about Internet based pathfinders for children. Please take a few minutes to complete it and return it to letto314@aol.com by March 5, 2004. If you think someone else at your institution is better suited to answer this questionnaire please forward it to him or her and ask them to return it.

I hope to use your responses to help determine how public libraries develop and maintain Internet based pathfinders for children. Your help in this matter is greatly appreciated. If you have any questions about participating in this survey please feel free to contact my graduate advisor Dr. Marilyn Shontz at mercan@aol.com or shontz@rowan.edu.

Thank you

Collette Baldasare
Graduate Student
Rowan University

1. Name of your library:

2. Your Title:

3. Please check all those who are responsible for creating electronic pathfinders for children. If more than one person in a category creates the pages, please indicate number.

_____ Web Master

_____ Reference Librarian

_____ Subject Bibliographer

_____ Children's Services Librarians

_____ Other (please explain) _____

4. How does your library determine what topics or subjects are included as part of your library electronic pathfinder collection for children?

5. How often are the Internet based pathfinders for children typically updated?

_____ Daily

_____ Weekly

_____ Monthly

_____ Once a year

_____ Other (please explain) _____

6. Does your library solicit and use patron input when creating or maintaining the Internet pathfinders for children? Y/N If yes, please explain.

7. How does your library select web sites for inclusion to your Internet based subject guides? Please mark all that apply.

_____ Our library has a written policy and we follow the guidelines.

_____ I/we surf the web to find sites.

_____ I/we use directories to find sites.

_____ I/we use current awareness guides to find sites.

_____ I/we consult subject guides maintained by other public libraries.

_____ Other (please explain) _____

8. How do you ensure your links are valid? Please check all that apply.

_____ The library has software that automatically checks the links.

_____ I/we manually check our links.

_____ Other (please explain). _____

9. Please feel free to make any comments you may have about pathfinders for children or this survey.

Thank you for your cooperation. Please return to letto314@aol.com by March 5, 2004.

Appendix B

Appendix B

Rubric

Criteria	Evaluation	Comments
1. Statement of Scope		
• Pathfinder topic is clearly Defined and described		
• Purpose of the Pathfinder Is clearly stated		
• Intended audience is Specified and Described		
2. Vocabulary		
• Relevant controlled vocabulary Terms specified		
• Useful call # areas for browsing Provided		
3. Print Resources		
• List is appropriate for the topic		
• Title categories are organized, Defined, & logical		
• Annotations are present		
• Annotations convey the value Of the source		
4. Online Resources		
• Annotations are present		
• Annotations convey the value Of the source		
• Items are selective		
• Items are appropriate to the topic		
• Resources clearly organized into Logical categories		

5. General Comments about Resources

- Categories of resources are appropriate

-
- Categories are clearly defined

-
- Variety of formats

6. Format and Organization

- Functional, well thought out

-
- Citations are complete

-
- Links to online resources direct

-
- Resources are selective
Not comprehensive

-
- Grammatically correct

-
- No spelling errors or typos

-
- Page uses bookmarks for navigation

-
- A navigation bar is a plus if the page
requires a lot of scrolling

7. Content

- The topic is of interest to others
And worth doing

-
- The introduction is well written

-
- The selected materials are of
High quality

-
- The sources are balanced

-
- The sources recommended
Are not likely to be uncovered
In a cursory search
-

-
- The web links are validated

-
- The pathfinder is signed and dated

8. Appearance

- The interface is clear, easy-to-read,
And printer-friendly

-
- The sources are logically divided
Into categories

-
- The format selected is consistent
Throughout

-
- The book titles and hyperlinks
Are differentiated

-
- The needs of the audience are
Considered and addressed through
The design

-
- There is adequate white space

-
- Type size is legible
-

*Items rank ordered on this rubric range from level zero to level five.

Zero= item does not exist; One= somewhat adequate; Two=adequate; Three=good;
Four=very good; Five=excellent.

Appendix C

Appendix C

List of Libraries

1. Library A

<http://www.crlibrary.org/pathfinder.html>

2. Library B

<http://www.stls.org/about/contact.htm>

3. Library C

<http://www.clayton.public.lib.ga.us/pathfind.htm>

4. Library D

http://www.st-charles.lib.il.us/youth_services/pathfinders/pathfinders_categories.htm

5. Library E

<http://www.lkwdpl.org/schools/schlpath.htm>

<http://www.lkwdpl.org/schools/midschl.htm>

6. Library F

http://infozone.imcpl.org/kids_pathfinders_alpha.htm

7. Library G

<http://www.camden.lib.nj.us/web/pathguidek.htm>

8. Library H

<http://www.publib.edmonton.ab.ca/EPLPathfinder.cfm>

9. Library I

http://www.northlakecollege.edu/nlcl/kids/kids_pathfinders.htm

10. Library J

<http://www.sclibrary.ab.ca/childrens/pathfinders.htm>